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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,656	07/28/2006	Toshimasa Kumaki	065341.00011	2833

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EXAMINER	
ROE, JESSEE RANDALL	
ART UNIT	**PAPER NUMBER**
1793	

NOTIFICATION DATE	DELIVERY MODE
07/06/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPGENERALTYC@SSD.COM
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Advisory Action Before the Filing of an Appeal Brief	**Application No.** 10/587,656	**Applicant(s)** KUMAKI ET AL.	
	Examiner JESSEE ROE	**Art Unit** 1793	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 25 June 2010 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *2,8,11,13,14 and 16-19*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/ Roy King/
Supervisory Patent Examiner, Art Unit 1793

Continuation of 3. NOTE: The proposed amendment to claim 2 changing "the material" to "the second element" in line 8 and the proposed amendment to claim 11 changing "the portion" to "the first portion" would require further consideration based on the change in scope .

Continuation of 11. does NOT place the application in condition for allowance because: Applicant's arguments filed 25 June 2010 have been fully considered but they are not persuasive.

First, the Applicant primarily argues that the specification provides sufficient support for the "first portion" and the "second portion" as recited in claims 2, 8, 11, 13, 14 and 16-19. The Applicant further argues that the specification discloses that powder is applied to the certain part of the member, i.e., the workpiece-pressing part of a forging punch - "a first portion," so that an element of the powder diffuses only into that part of the member whereas, a large section 12 and a diametrically reduced section 14 of the member - "a second portion" do not have powder applied thereto and as a result, the Fe-based alloy member has desired properties along specific portions of the member and the specification provides sufficient support for the "first portion" and the "second portion" to satisfy the written description of 35 U.S.C. §112, first paragraph.

In response, the Examiner notes that the portion of the specification referred to by the Applicant does not refer to the claimed subject matter. Therefore, the rejection under 35 U.S.C. §112, first paragraph is maintained.

Second, Applicant's arguments with regard to the rejection of claims 2, 8, 11, 13-14 and 16-19 under 35 U.S.C. 112, second paragraph are moot since they rely upon the entry of the amendment filed 25 June 2010 which has not been entered.

Third, the Applicant primarily argues that Kaufman ('077) fails to disclose or suggest "a coating disposed on an outer surface of a first portion of the layered Fe-based alloy member, wherein the coating comprises a carbide formed by carbonizing a first element that comprises a property to increase a hardness of the layered Fe-based alloy member at the first portion, and wherein the coating further comprises a thickness of at least 0.5 mm; and a second element disposed in a second portion of the layered Fe-based alloy member, wherein the material comprises an amount that is greater on the outer surface than at an inside portion of the layered Fe-based alloy member, wherein a hardness of the layered Fe-based alloy member at the first portion is greater at the inside portion than on the outer surfaces of the layered Fe-based alloy member." The Applicant further argues that powder is applied only to the certain part of the member, i.e., the workpiece-pressing part of the forging punch so that the element of the powder diffuses only into that part of the member Therefore, the Fe-based alloy member has desired properties along specific portions of the member.

In response, Kaufman ('077) discloses a method for producing an iron-based alloy parts wherein an alloyed additive powder having selected alloying ingredients (such as manganese, nickel, molybdenum) blended with the iron-base (iron-carbon-alloy) powder and the additive alloy powder is coated with copper (first portion) (applied to a surface of the iron-based alloy) and sintered at a temperature in the range of 2060°F to 2080°F (1127°C to 1138°C) (abstract, col. 5, lines 10-25, col. 7, lines 12-31, and col. 10, lines 26-29). Kaufman ('077) further discloses that the outer peripheral region of each iron base powder particle (second portion) will become enriched with carbon and alloying ingredients. Since Kaufman ('077) discloses substantially similar steps of treating the same or substantially the same composition, the structure "wherein said coating contains a thickness of at least 0.5 mm and a carbide formed by carbonizing a first element that has a property for increasing hardness of an Fe-based alloy, wherein a second element other than said first element, is contained in said Fe-based alloy, said second element having an amount which is larger in said surface layer portion as compared with said inside portion, and wherein an amount of said first element increases from said surface layer portion in said inside portion" would be expected. MPEP 2112.01 I. Alternatively, it would have been obvious to one having ordinary skill in the art to modify the size/quantity of the particles of alloy additive powder having ingredients (such as manganese, nickel, and molybdenum) such that thickness of 0.5 mm would be met since the ratio of base alloy powder to additive alloy powder is result-effective in terms of compressibility and cost (economy) (col. 6, lines 45-63). MPEP 2144.05 II.

Fourth, the Applicant primarily argues that Kaufman ('077) fails to further disclose or suggest that only a certain portion of the alloy parts is sintered with a coating for increasing the hardness at that certain portion, while other parts of the member are not coated with the coating. The Applicant further argues that the specification discloses that powder is applied only to a certain portion of the Fe-based alloy member, i.e., the workpiece-pressing part of a forging punch - "a first portion," so that an element of the powder diffuses only into that part of the member. Whereas, a large section 12 and a diametrically reduced section 14 of the member - "a second portion" do not have powder applied thereto. The Applicant further argues that the Fe-based alloy member has desired properties along specific portion of the member and on having ordinary skill in the art would have clearly understand that the "first portion" and the "second portion" are separate portions of the Fe-based alloy member and therefore the "first portion" would clearly not have been entirely or part of the "second portion" as alled in the Office Action.

In response, the Examiner notes that Kaufman ('077) need not teach or suggest that only a certain portion of the alloy parts is sintered in order to meet the pending claims since such is recited in the pending claims. Additionally, the Examiner notes that the "certain portion" referred to by the Applicant is not distinguished by the instant specification to be "a first portion" or a "a second portion". Therefore, Applicant's arguments are not persuasive. Additionally, one having ordinary skill in the art would not necessarily believe that "a first portion" would necessarily not include or be a part of "a second portion" since Applicant has failed to provide a definition for these phrases in the instant specification.

Fifth, the Applicant primarily argues that Tahara et al. ('282) alone, or alternatively in view of the ASM Handbook Volume 4 fails to disclose or suggest "a coating disposed on an outer surface of a first portion of the layered Fe-based alloy member, wherein the coating comprises a carbide formed by carbonizing a first element that comprises a property to increase a hardness of the layered Fe-based alloy member at the first portion, and wherein the coating further comprises a thickness of at least 0.5 mm; and a second element disposed in a

second portion of the layered Fe-based alloy member, wherein the material comprises an amount that is greater on the outer surface than at an inside portion of the layered Fe-based alloy member, wherein a hardness of the layered Fe-based alloy member at the first portion is greater at the inside portion than on the outer surfaces of the layered Fe-based alloy member.". The Applicant further argues that one of ordinary skill in the art would have understood that in a process of carburizing, as discussed in Tahara et al. ('282), a carbide layer is unevenly distributed at a surface layer portion of the steel and Tahara et al. ('282) fails to disclose that "a hardness of the layered Fe-based alloy member at the first portion is greater at the inside portion than on the outer surface of the layered Fe-based alloy member."

In response, Tahara et al. ('282) discloses carburizing austenitic stainless steel members, which inherently has an iron-base, comprising 1 to 6 weight percent molybdenum and 13 to 25 weight percent chromium (abstract and col. 2, lines 57-67). Tahara et al. ('282) discloses that carbon diffuses and penetrates the surface to form a deep uniform layer (col. 6, lines 23-29) wherein chromium carbide can hardly be identified and more of the chromium is present in the steel than in the case (col. 8, lines 1-22). The Examiner notes that the structure disclosed by Tahara et al. ('282) is the same as that of the instant invention. Therefore, an increase in hardness from the surface to an inside portion thereof is expected. MPEP 2112.01 I.

Sixth, the Applicant primarily argues that neither Tahara et al. ('282) nor the ASM Handbook Volume 4 disclose or suggest a "first portion" and a "second portion" as recited in claims 2, 8 and 16-19.

In response, the Examiner notes that the steel and the case would define "a first portion" and "a second portion".

Seventh, the Applicant primarily argus that the Office Action of 25 March 2010 failed to demonstrate that one of ordinary skill in the art would have found it obvious to exceed the carburizing depth discussed in Tahara et al. ('282) by a magnitude of over eight times when Tahara explicitly discloses that the maximum depth of the carburized layer is limited to 70 microns. The Applicant further argues that although one could have known from the ASM Handbook that carburizing time and temperature directly impact the depth of carbon diffusion, one would not have looked to modify Tahara et al. ('282) because Tahara et al. ('282) explicitly teaches away from a carburizing layer thickness having a magnitude of at least 0.5 mm and would render Tahara et al. ('282) unsatisfactory for its intended purpose.

In response, the Examiner notes that carburizing time and carburizing temperature directly impact the depth on carbon diffusion in a substrate and this was well known in the art prior to the filing date of the instant application. As those skilled in the art know, larger carburized depths are desirable when wear resistance at lower depths within a material are desired.

Eighth, the Applicant primarily argues that the Office Action acknowledged that Wang et al. ('129) fails to explicitly disclose every element recited in the claims.

In response, the Examiner did not make such a statement in the Office Action of 25 March 2010.

Ninth, the Applicant primarily argues that Wang et al. ('129) fails to disclose or suggest "a coating disposed on an outer surface of a first portion of the layered Fe-based alloy member, wherein the coating comprises a carbide formed by carbonizing a first element that comprises a property to increase a hardness of the layered Fe-based alloy member at the first portion, and wherein the coating further comprises a thickness of at least 0.5 mm; and a second element disposed in a second portion of the layered Fe-based alloy member, wherein the material comprises an amount that is greater on the outer surface than at an inside portion of the layered Fe-based alloy member; wherein a hardness of the layered Fe-based alloy member at the first portion is greater at the inside portion than on the outer surface of the layered Fe-based alloy member."

In response, Wang et al. ('129) discloses making steel articles with hard, wear-resistant carbide coatings (abstract) wherein a niobium carbide, vanadium carbide, or mixed vanadium/niobium carbide coating placed on the steel article by utilizing a chemical deposition process carried out with the aid of immersion in vanadium, niobium or mixed vanadium/niobium powder (col. 2, line 60 – col. 3, line 14). Wang et al. ('129) further discloses that the niobium and/or vanadium draw carbon (second element) from the substrate steel to the surface to form the carbide layer, thereby having a surface layer with more carbon compared with the inside of the steel article (col. 3, lines 3-15), and drawing a small amount of chromium (first element) from the steel substrate in the vanadium, niobium or niobium and vanadium coating (abstract and col. 3, lines 44-55), thereby having chromium (first element) increase from the surface layer to the inside portion. With respect to the recitation "applying, to a surface of said Fe-based alloy, a powder made up of a substance which contains said second element" in lines 11-12 of claim 11, Wang et al. ('129) discloses mixing chromium with vanadium and niobium in the powder pack (col. 3, lines 44-55). With respect to the recitation "heat-treating said Fe-based alloy with said powder applied thereto, so that said first element is diffused to said surface layer portion, and said first element reacts with carbon existing in said surface layer portion of said Fe-based alloy to form said carbide" in lines 13-15 of claim 11, Wang et al. ('129) discloses tumbling in the niobium and/or vanadium and/or chromium powder at 1600°F to 2000°F (col. 4, lines 37-51). With respect to the formation of a coating with a thickness of at least 0.5 mm in line 6 of claim 11, Wang et al. ('129) discloses heating at 1600°F to 2000°F for a time sufficient to form a coating of desired thickness on the article having a hardness of at least HV2000. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the time at a temperature in the temperature range of 1600°F to 2000°F to achieve the desired coating thickness. MPEP 2144.05 II. With respect to the recitation "wherein said carbide comprises a compositional formula of M6C or M23C6 wherein M represents a metal element" in claim 17 and wherein said carbide comprises a compositional formula of (Fe,M)6C or (Fe,M)23 C6 wherein M represents a metal element" in claim 19, the Examiner notes that Wang et al. ('129) discloses forming chromium carbides, niobium carbides, and vanadium carbides (col. 5, lines 5-12). Additionally, because Wang et al. ('129) discloses a substantially similar process and composition, these carbides would be expected. MPEP 2112.01 I.

Tenth, the Applicant primarily argues that the members disclosed in Wang et al. ('129) are completely coated with the carbide. Therefore, Wang et al. ('129) fails to disclose or suggest that a hardness of the members at a first portion is greater at an inside portion thereof than on an outer surface of these members. Therefore, Wang et al. ('129) fails to disclose or suggest that a hardness of the members at a first

portion is greater at an inside portion than on an outer surface of these members.

In response, the Examiner notes that the claims do not preclude the members from being coated with a carbide. Additionally, Wang et al. ('129) further discloses that the niobium and/or vanadium draw carbon (second element) from the substrate steel to the surface to form the carbide layer, thereby having a surface layer with more carbon compared with the inside of the steel article (col. 3, lines 3-15), and drawing a small amount of chromium (first element) from the steel substrate in the vanadium, niobium or niobium and vanadium coating (abstract and col. 3, lines 44-55), thereby having chromium (first element) increase from the surface layer to the inside portion.

Eleventh, the Applicant primarily argues that Wang et al. ('129) discloses that the steel is immersed in ferrovanadium (FeV), ferroniobium (FeNb), or mixed FeV/FeNb. Wang et al. ('129) also discloses that halide vanadium or halide niobium draws carbon and one of ordinary skill in the relevant art would have understood that Wang et al. ('129) discloses that carbon is drawn from the steel by displacement of halide and that a reaction mechanism is distinguishable from the diffusion mechanism disclosed for embodiments of the present invention.

In response, the Examiner notes that a reaction mechanism does not preclude a diffusion mechanism from taking place and Applicant has not provided data to show that diffusion would not occur in Wang et al. ('129).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JR/